Volunteer Lake Assessment Program Individual Lake Reports
THORNDIKE POND, JAFFREY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,560	Max. Depth (m):	7	Flushing Rate (yr[1])	1.7
Surface Area (Ac.):	265	Mean Depth (m):	3.4	P Retention Coef:	0.64
Shore Length (m):	6,000	Volume (m³):	3,513,500	Elevation (ft):	1159

TROPHIC CLASSIFICATION

Year	Trophic class
1998	OLIGOTROPHIC
2009	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

THORNDIKE POND - CAMP WANOCKSETT BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
THORNDIKE POND - CAMP WA-KLO BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
THORNDIKE POND - TOWN BEACH	Escherichia coli	Slightly Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. Exceedances are <2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.
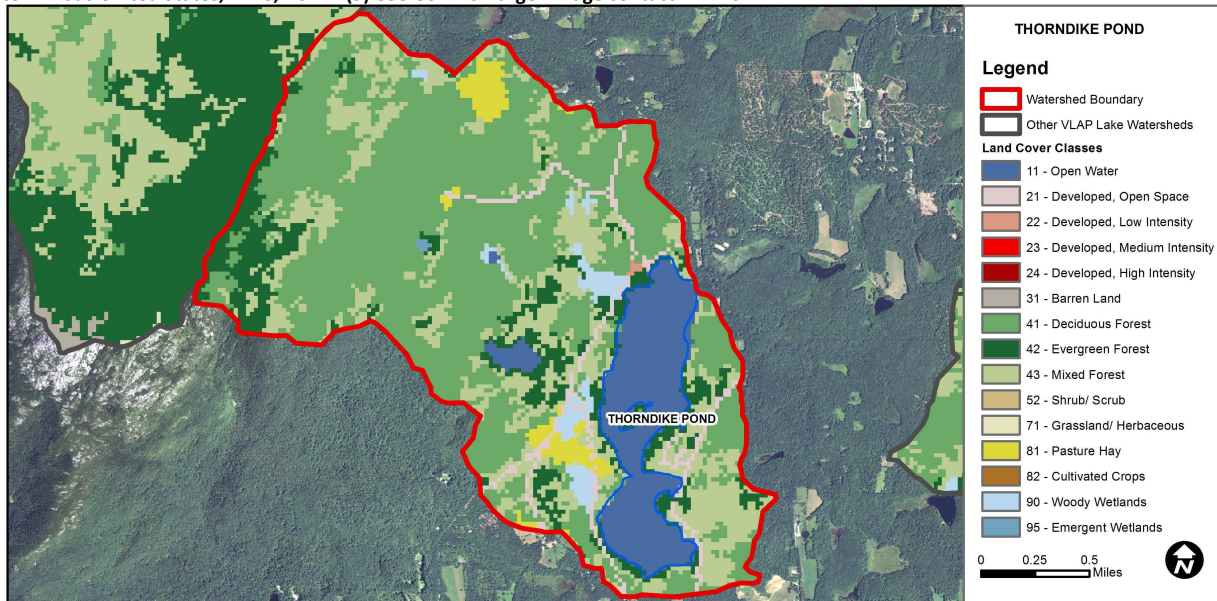
| Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.08	Deciduous Forest	49.8	Pasture Hay	2.55
Developed-Low Intensity	0.08	Evergreen Forest	10.06	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	21.11	Woody Wetlands	2.07
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0.08

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

THORNDIKE POND, JAFFREY

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics*)

- **CHLOROPHYLL-A:** Chlorophyll levels were stable and remained low from June through August. Average chlorophyll levels decreased from 2013 and were less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity remained low and less than the state median. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic (lower water layer) phosphorus levels were low in June and July and then increased to average levels in August. Average epilimnetic phosphorus increased slightly from 2013 but remained less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began.
- **TRANSPARENCY:** Transparency remained relatively stable from June to August, improved slightly from 2013, and was better than the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic turbidity was slightly above average in July potentially due to algal growth. Hypolimnetic turbidity was within the average range for the station. North West Inlet turbidity was slightly above average on each sampling event and South West Inlet turbidity was elevated in June and August likely due to low flows.
- **PH:** Deep spot and tributary pH levels were less than the desirable range 6.5-8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- **RECOMMENDED ACTIONS:** The worsening epilimnetic pH trend is concerning particularly since air pollutants associated with acid rain have improved in recent years due to the Clean Air Act regulations. The increased frequency and intensity of storm events may be resulting in increased flushing of wetland systems transporting waters rich in organic acids to the lake. The stable water quality trends are a good sign considering the increased frequency and intensity of storm events and associated stormwater runoff. Keep up the great work!

Dissolved Oxygen & Temp Profile August, 2014
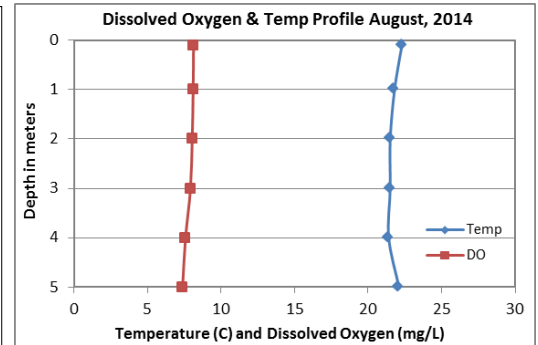
Station Name	Table 1. 2014 Average Water Quality Data for THORNDIKE POND							
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
					NVS	VS		
Epilimnion	2.23	3.29	35.9	7	3.90	3.81	1.17	6.21
Hypolimnion			34.0	8			1.74	6.20
North West Inlet			36.0	10			1.68	6.28
Outlet			34.6	7			0.99	6.44
South West Inlet			39.9	17			3.64	6.33

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

Historical Trend Epilimnetic Conductivity and pH

Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data